

STN Columbus

NEWS 1 Web Page URLs for STN Seminar Schedule - N. America  
NEWS 2 Apr 08 "Ask CAS" for self-help around the clock  
NEWS 3 Apr 09 BEILSTEIN: Reload and Implementation of a New Subject Area  
NEWS 4 Apr 09 ZDB will be removed from STN  
NEWS 5 Apr 19 US Patent Applications available in IFICDB, IFIPAT, and IFIUDB  
NEWS 6 Apr 22 Records from IP.com available in CAPLUS, HCAPLUS, and ZCAPLUS  
NEWS 7 Apr 22 BIOSIS Gene Names now available in TOXCENTER  
NEWS 8 Apr 22 Federal Research in Progress (FEDRIP) now available  
NEWS 9 Jun 03 New e-mail delivery for search results now available  
NEWS 10 Jun 10 MEDLINE Reload  
NEWS 11 Jun 10 PCTFULL has been reloaded  
NEWS 12 Jul 02 FOREGE no longer contains STANDARDS file segment  
NEWS 13 Jul 22 USAN to be reloaded July 28, 2002;  
saved answer sets no longer valid  
NEWS 14 Jul 29 Enhanced polymer searching in REGISTRY  
NEWS 15 Jul 30 NETFIRST to be removed from STN  
NEWS 16 Aug 08 CANCERLIT reload  
NEWS 17 Aug 08 PHARMAMarketLetter(PHARMAML) - new on STN  
NEWS 18 Aug 08 NTIS has been reloaded and enhanced  
NEWS 19 Aug 19 Aquatic Toxicity Information Retrieval (AQUIRE)  
now available on STN  
NEWS 20 Aug 19 IFIPAT, IFICDB, and IFIUDB have been reloaded  
NEWS 21 Aug 19 The MEDLINE file segment of TOXCENTER has been reloaded  
NEWS 22 Aug 26 Sequence searching in REGISTRY enhanced  
NEWS 23 Sep 03 JAPIO has been reloaded and enhanced  
NEWS 24 Sep 16 Experimental properties added to the REGISTRY file  
NEWS 25 Sep 16 Indexing added to some pre-1967 records in CA/CAPLUS  
NEWS 26 Sep 16 CA Section Thesaurus available in CAPLUS and CA  
NEWS 27 Oct 01 CASREACT Enriched with Reactions from 1907 to 1985  
NEWS 28 Oct 21 EVENTLINE has been reloaded  
NEWS 29 Oct 24 BEILSTEIN adds new search fields  
NEWS 30 Oct 24 Nutraceuticals International (NUTRACEUT) now available on STN  
NEWS 31 Oct 25 MEDLINE SDI run of October 8, 2002  
NEWS 32 Nov 18 DKILIT has been renamed APOLLIT  
NEWS 33 Nov 25 More calculated properties added to REGISTRY  
NEWS 34 Dec 02 TIBKAT will be removed from STN  
NEWS 35 Dec 04 CSA files on STN  
NEWS 36 Dec 17 PCTFULL now covers WP/PCT Applications from 1978 to date  
NEWS 37 Dec 17 TOXCENTER enhanced with additional content  
NEWS 38 Dec 17 Adis Clinical Trials Insight now available on STN  
  
NEWS EXPRESS October 14 CURRENT WINDOWS VERSION IS V6.01,  
CURRENT MACINTOSH VERSION IS V6.0a(ENG) AND V6.0Ja(JP),  
AND CURRENT DISCOVER FILE IS DATED 01 OCTOBER 2002  
  
NEWS HOURS STN Operating Hours Plus Help Desk Availability  
NEWS INTER General Internet Information  
NEWS LOGIN Welcome Banner and News Items  
NEWS PHONE Direct Dial and Telecommunication Network Access to STN  
NEWS WWW CAS World Wide Web Site (general information)

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STN Columbus

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FILE 'HOME' ENTERED AT 17:35:50 ON 17 DEC 2002

=> file inspec

FILE 'INSPEC' ENTERED AT 17:35:59 ON 17 DEC 2002

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FILE LAST UPDATED: 16 DEC 2002 <20021216/UP>  
FILE COVERS 1969 TO DATE.

<<< NEW DISPLAY FORMAT 'SCAN' AVAILABLE NOW >>>

```

=> e etching + all/ct
E1      14391    BT1  SURFACE TREATMENT/CT
E2      20865    --> ETCHING/CT
                  DA   JANUARY 1969
E3      1612     NT1  DISLOCATION ETCHING/CT
E4      545      NT1  LASER BEAM ETCHING/CT
E5      15795    NT1  SPUTTER ETCHING/CT
E6      17564    RT   CORROSION/CT
E7      16575    RT   CRYSTAL DEFECTS/CT
E8      584      RT   CRYSTALS/CT
E9      3770     RT   LASER ABLATION/CT
E10     4714     RT   METALLOGRAPHY/CT
E11     8112     RT   MICROMACHINING/CT
E12     9770     RT   PRINTED CIRCUITS/CT
E13     2493     RT   PRINTING/CT
E14     14719    RT   SEMICONDUCTOR TECHNOLOGY/CT
E15     19002    CC   A6170J/CT
E16     15557    CC   A8160/CT
E17     14397    CC   B0170G/CT
E18     164      CC   B2200/CT
E19     39869    CC   B2550E/CT
E20     6290     CC   B2575F/CT
E21     1612     KT   DISLOCATION ETCHING/CT
E22      0       KT   FIB ETCHING/CT
E23      0       KT   FOCUSED ION BEAM ETCHING/CT
E24      0       KT   ION ETCHING/CT
E25     545      KT   LASER BEAM ETCHING/CT
E26      0       KT   PLASMA ETCHING/CT
E27      0       KT   REACTIVE ION ETCHING/CT
E28      0       KT   REACTIVE SPUTTER ETCHING/CT
E29     15795    KT   SPUTTER ETCHING/CT
***** END *****

```

=> ozone

=> water

L2 199298 WATER

=&gt; adsorption or adsorbed

43433 ADSORPTION

34682 ADSORBED

L3 62998 ADSORPTION OR ADSORBED

=&gt; l1 and l2 and l3

L4 26 L1 AND L2 AND L3

=&gt; d 1-26

L4 ANSWER 1 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2002:7305707 INSPEC DN B2002-08-8695-001

TI Mechanism-analysis and simulation of the storage and removal of ozone to level electric power loads.

AU Murai, A. (Kansai Electric Power Co., Japan); Tahara, N.; Nakajima, T.

SO Transactions of the Institute of Electrical Engineers of Japan, Part D (March 2002) vol.122-D, no.3, p.223-34. 23 refs.

Published by: Inst. Electr. Eng. Japan

CODEN: DGRDE5 ISSN: 0913-6339

SICI: 0913-6339(200203)122D:3L.223:MASS;1-Y

DT Journal

TC Practical

CY Japan

LA Japanese

L4 ANSWER 2 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2002:7304973 INSPEC DN A2002-15-2875-012

TI Developmental study of dry decontamination for tritiated wastes.

AU Itoh, T.; Ueda, S.; Tatenuma, K. (Kaken Co. Ltd., Ibaraki, Japan); Torikai, Y.; Matsuyama, M.; Watanabe, K.

SO Fusion Science and Technology (May 2002) vol.41, no.3, pt.2, p.741-5. 5 refs.

Published by: ANS

CODEN: FUSTE8 ISSN: 1536-1055

SICI: 1536-1055(200205)41:3:2L.741:DSDT;1-O

Conference: Sixth International Conference on Tritium Science and Technology. Tsukuba, Japan, 12-16 Nov 2001

DT Conference Article; Journal

TC Experimental

CY United States

LA English

L4 ANSWER 3 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2002:7261271 INSPEC DN A2002-12-5275-010

TI Effects of electrode patterns on a coplanar discharge ozonizer.

AU Okita, Y.; Noguchi, M.; Murata, T. (Toshiba Corp., Kawasaki, Japan)

SO 25th ICPIG. International Conference on Phenomena in Ionized Gases Editor(s): Goto, T.

Nagoya, Japan: Nagoya Univ, 2001. p.29-30 vol.4 of 4 vol.(371+273+375+365) pp. 3 refs.

Conference: Nagoya, Japan, 17-22 July 2001

Sponsor(s): IUPAP; Japan Soc. Appl. Phys.; Phys. Soc. Japan; Inst. Electr.

Eng. Japan; et al

ISBN: 4-9900915-0-7

DT Conference Article

STN Columbus

TC Practical; Experimental  
CY Japan  
LA English

L4 ANSWER 4 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2002:7140123 INSPEC DN A2002-04-8265-001  
TI Photoreactivity on a **water** ice surface: cyanoacetylene (HC<sub>3</sub>N) reaction with atomic oxygen issued from the photodissociation of **ozone** (O<sub>3</sub>) at 255 nm.  
AU Borget, F.; Chiavassa, T. (CNRS, Univ. de Provence, Marseille, France); Aycard, J.-P.  
SO Chemical Physics Letters (16 Nov. 2001) vol.348, no.5-6, p.425-32. 35 refs.  
Doc. No.: S0009-2614(01)01138-1  
Published by: Elsevier  
Price: CCCC 0009-2614/01/\$20.00  
CODEN: CHPLBC ISSN: 0009-2614  
SICI: 0009-2614(20011116)348:5/6L.425:PWSC;1-#  
DT Journal  
TC Experimental  
CY Netherlands  
LA English

L4 ANSWER 5 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2001:7099545 INSPEC DN A2002-01-3640-004  
TI Equilibrium structures of the N = 64 **water** cluster in the presence of external electric fields.  
AU Shevkunova, S.V. (Phys. & Mech. Dept., St. Petersburg State Tech. Univ., Russia); Vegiri, A.  
SO THEOCHEM (16 Nov. 2001) vol.574, p.27-38. 53 refs.  
Doc. No.: S0166-1280(00)00830-7  
Published by: Elsevier  
Price: CCCC 0166-1280/01/\$20.00  
CODEN: THEODJ ISSN: 0166-1280  
SICI: 0166-1280(20011116)574L.27:ESWC;1-7  
DT Journal  
TC Theoretical  
CY Netherlands  
LA English

L4 ANSWER 6 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2001:6855500 INSPEC DN A2001-07-7865H-008  
TI Optical properties of nanodiamond layers.  
AU Aleksenskii, A.E.; Osipov, V.Yu.; Vul, A.Ya.; Ber, B.Ya.; Smirnov, A.B.; Melekhin, V.G. (A.F. Ioffe Physicotech. Inst., Acad. of Sci., St. Petersburg, Russia); Adriaenssens, G.J.; Iakoubovskii, K.  
SO Physics of The Solid State (Jan. 2001) vol.43, no.1, p.145-50. 24 refs.  
Published by: MAIK Nauka  
Price: CCCC 1063-7834/2001/4301-0145\$21.00  
CODEN: PSOSED ISSN: 1063-7834  
SICI (Trl): 1063-7834(200101)43:1L.145:OPNL;1-V  
Translation of: Fizika Tverdogo Tela (Jan. 2001) vol.43, no.1, p.140-5. 24 refs.  
CODEN: FTVTAC ISSN: 0367-3294  
SICI: 0367-3294(200101)43:1L.140;1-B  
DT Journal; Translation Abstracted  
TC Experimental

STN Columbus

CY Russian Federation; Russian Federation  
LA English

L4 ANSWER 7 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2000:6730246 INSPEC DN A2000-22-3320E-012  
TI Infrared spectroscopy of neat solid **ozone** and that of **ozone** in interaction with amorphous and crystalline **water** ice.  
AU Chaabouni, H.; Schriver-Mazznoli, L.; Schriver, A. (Lab. de Phys. Moleculaire et Atmos., Univ. Pierre et Marie Curie, Paris, France)  
SO Journal of Physical Chemistry A (3 Aug. 2000) vol.104, no.30, p.6962-9. 44 refs.

Published by: ACS

Price: CCCC 1089-5639/2000/\$19.00

CODEN: JPCAFH ISSN: 1089-5639

SICI: 1089-5639(20000803)104:30L.6962:ISNS;1-U

DT Journal

TC Experimental

CY United States

LA English

L4 ANSWER 8 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2000:6603594 INSPEC DN A2000-13-3480G-006  
TI Mechanism for giant Cl- and F- enhancements in electron-induced dissociation of CF<sub>2</sub>Cl<sub>2</sub> coadsorbed with **water** or ammonia ices.  
AU Lu, Q.-B.; Madey, T.E. (Dept. of Phys. & Astron., Rutgers Univ., Piscataway, NJ, USA)  
SO Surface Science (20 April 2000) vol.451, no.1-3, p.238-43. 21 refs.  
Doc. No.: S0039-6028(00)00037-6  
Published by: Elsevier  
Price: CCCC 0039-6028/2000/\$20.00  
CODEN: SUSCAS ISSN: 0039-6028  
SICI: 0039-6028(20000420)451:1/3L.238:MGEE;1-T  
Conference: DIET-8. Eighth International Workshop on Desorption Induced by Electronic Transitions. San Alfonso, NJ, USA, 27 Sept-1 Oct 1999

DT Conference Article; Journal

TC Experimental

CY Netherlands

LA English

L4 ANSWER 9 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1999:6334163 INSPEC DN A1999-19-3480G-002  
TI Giant enhancement of electron-induced dissociation of chlorofluorocarbons coadsorbed with **water** or ammonia ices: Implications for atmospheric **ozone** depletion.  
AU Lu, Q.-B.; Madey, T.E. (Lab. for Surface Modification & Dept. of Phys. & Astron., Rutgers Univ., Piscataway, NJ, USA)  
SO Journal of Chemical Physics (15 Aug. 1999) vol.111, no.7, p.2861-4. 35 refs.  
Doc. No.: S0021-9606(99)01931-5  
Published by: AIP  
Price: CCCC 0021-9606/99/111(7)/2861(4)/\$15.00  
CODEN: JCPSA6 ISSN: 0021-9606  
SICI: 0021-9606(19990815)111:7L.2861:GEEI;1-V

DT Journal

TC Experimental

CY United States

LA English

STN Columbus

L4 ANSWER 10 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1999:6123482 INSPEC DN A1999-03-6860-020  
TI Moisture instability of borophosphosilicate glass and the effects of thermal treatment.  
AU Dyer, T.W. (Semicond. Syst., Rockwell Int. Corp., Newport Beach, CA, USA)  
SO Journal of the Electrochemical Society (Nov. 1998) vol.145, no.11, p.3950-6. 16 refs.  
Published by: Electrochem. Soc  
Price: CCCC 0013-4651/98/\$7.00  
CODEN: JESOAN ISSN: 0013-4651  
SICI: 0013-4651(199811)145:11L.3950:MIBG;1-H  
DT Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 11 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1998:5955260 INSPEC DN A9815-6845-021  
TI HOCl adsorption on ice surfaces.  
AU Robinson Brown, A.; Doren, D.J. (Dept. of Chem. & Biochem., Delaware Univ., Newark, DE, USA)  
SO Journal of Physical Chemistry B (7 Aug. 1997) vol.101, no.32, p.6308-12. 24 refs.  
Doc. No.: S1089-5647(96)03245-2  
Published by: ACS  
Price: CCCC 1089-5647/97/\$14.00  
CODEN: JPCBFK ISSN: 1089-5647  
SICI: 1089-5647(19970807)101:32L.6308:HAS;1-M  
Conference: Physics and Chemistry of Ice 1996. Hanover, NH, USA, 27-31 Aug 1996  
DT Conference Article; Journal  
TC Theoretical  
CY United States  
LA English

L4 ANSWER 12 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1998:5812704 INSPEC DN A9805-9220-002  
TI Vertical profiles of bromoform in snow, sea ice, and seawater in the Canadian Arctic.  
AU Sturges, W.T. (Sch. of Environ. Sci., East Anglia Univ., Norwich, UK); Cota, G.F.; Buckley, P.T.  
SO Journal of Geophysical Research (15 Nov. 1997) vol.102, no.C11, p.25073-83. 44 refs.  
Published by: American Geophys. Union  
Price: CCCC 0148-0227/97/97JC-01860\$09.00  
CODEN: JGREA2 ISSN: 0148-0227  
SICI: 0148-0227(19971115)102:C11L.25073:VPBS;1-S  
DT Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 13 OF 26 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE

Full Text

AN 1997:5755365 INSPEC DN A9801-8265-002  
TI Heat of immersion calorimetry studies of carbon blacks.

STN Columbus

AU Sheng, E.; Sutherland, I.; Bradley, R.H.; Freakley, P.K. (Loughborough Univ. of Technol., UK)

SO Materials Chemistry and Physics (Aug. 1997) vol.50, no.1, p.25-30. 11 refs.

Published by: Elsevier

Price: CCCC 0254-0584/97/\$17.00

CODEN: MCHPDR ISSN: 0254-0584

SICI: 0254-0584(199708)50:1L.25:HICS;1-O

DT Journal

TC Experimental

CY Switzerland

LA English

L4 ANSWER 14 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1997:5646473 INSPEC DN A9717-9260-088

TI The reaction of ClONO<sub>2</sub> with HCl on aluminum oxide.

AU Molina, M.J.; Molina, L.T.; Renyi Zhang; Meads, R.F.; Spencer, D.D. (Dept. of Earth Atmos. & Planetary Sci., MIT, Cambridge, MA, USA)

SO Geophysical Research Letters (1 July 1997) vol.24, no.13, p.1619-22. 33 refs.

Published by: American Geophys. Union

Price: CCCC 0094-8276/97/97GL-01560\$05.00

CODEN: GPRLAJ ISSN: 0094-8276

SICI: 0094-8276(19970701)24:13L.1619:RCWA;1-I

DT Journal

TC Experimental

CY United States

LA English

L4 ANSWER 15 OF 26 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE

Full Text

AN 1997:5645860 INSPEC DN A9717-8670G-006

TI XPS, SIMS and SNMS applied to a combined analysis of aerosol particles from a region of considerable air pollution in the upper Rhine valley.

AU Faude, F.; Goschnick, J. (Inst. fur Instrum. Anal., Forschungszentrum Karlsruhe GmbH Tech. und Umwelt, Germany)

SO Fresenius' Journal of Analytical Chemistry (May 1997) vol.358, no.1-2, p.67-72. 15 refs.

Published by: Springer-Verlag

CODEN: FJACES ISSN: 0937-0633

SICI: 0937-0633(199705)358:1/2L.67:SSAC;1-W

Conference: 9th Applied Surface Analysis Workshop (AOFA 9). Aachen, Germany, 24-27 June 1996

DT Conference Article; Journal

TC Experimental

CY Germany, Federal Republic of

LA English

L4 ANSWER 16 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1997:5639119 INSPEC DN A9717-7960-005

TI X-ray photoemission spectroscopy study of UV/ozone oxidation of Au under ultrahigh vacuum conditions.

AU Krozer, A.; Rodahl, M. (Dept. of Appl. Phys., Chalmers Univ. of Technol., Goteborg, Sweden)

SO Journal of Vacuum Science & Technology A (Vacuum, Surfaces, and Films) (May-June 1997) vol.15, no.3, pt.2, p.1704-9. 17 refs.

Doc. No.: S0734-2101(97)59603-5

Published by: AIP for American Vacuum Soc

STN Columbus

Price: CCCC 0734-2101/97/15(3)/1704/6/\$10.00  
CODEN: JVTAD6 ISSN: 0734-2101  
SICI: 0734-2101(199705/06)15:3:2L.1704:PSSO;1-6  
Conference: 43rd National Symposium of the American Vacuum Society.  
Philadelphia, PA, USA, 14-18 Oct 1996

DT Conference Article; Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 17 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1996:5191703 INSPEC DN A9606-9260-018  
TI Uptake of HBr on ice at polar atmospheric conditions.  
AU Chu, L.T.; Heron, J.W. (NYS Health Dept., Wadsworth Center, Albany, NY, USA)  
SO Geophysical Research Letters (1 Dec. 1995) vol.22, no.23, p.3211-14. 23 refs.

Published by: American Geophys. Union  
Price: CCCC 0094-8276/95/95GL-03290\$03.00

CODEN: GPRLAJ ISSN: 0094-8276  
SICI: 0094-8276(19951201)22:23L.3211:UPAC;1-4

DT Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 18 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1995:5128586 INSPEC DN A9602-8240-002  
TI Sulfuric acid monohydrate: formation and heterogeneous chemistry in the stratosphere.  
AU Zhang, R.; Leu, M.-T.; Keyser, L.F. (Jet Propulsion Lab., California Inst. of Technol., Pasadena, CA, USA)  
SO Journal of Geophysical Research (20 Sept. 1995) vol.100, no.D9, p.18845-54. 43 refs.

Price: CCCC 0148-0227/95/95JD-01876\$05.00

CODEN: JGREA2 ISSN: 0148-0227

DT Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 19 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1995:5034436 INSPEC DN A9519-8160B-001  
TI Removing sulfur from gold using ultraviolet/ozone cleaning.  
AU Worley, C.G.; Linton, R.W. (Dept. of Chem., North Carolina Univ., Chapel Hill, NC, USA)  
SO Journal of Vacuum Science & Technology A (Vacuum, Surfaces, and Films) (July-Aug. 1995) vol.13, no.4, p.2281-4. 13 refs.  
Price: CCCC 0734-2101/95/13(4)/2281/4/\$6.00

CODEN: JVTAD6 ISSN: 0734-2101

DT Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 20 OF 26 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE

Full Text

STN Columbus

AN 1995:5017258 INSPEC DN A9517-9630G-005  
TI Photochemistry and stability of the atmosphere of Mars.  
AU Atreya, S.K.; Gu, Z.G. (Dept. of Atmos., Oceanic & Space Sci., Michigan  
Univ., Ann Arbor, MI, USA)  
SO Advances in Space Research (1995) vol.16, no.6, p.57-68. 28 refs.  
Price: CCCC 0273-1177/95/\$9.50+0.00  
CODEN: ASRSDW ISSN: 0273-1177  
Conference: Atmospheres of Venus and Mars. C3.1 Meeting of COSPAR  
Scientific Commission C which was held during the Thirtieth COSPAR  
Scientific Assembly. Hamburg, Germany, 11-21 July 1994  
DT Conference Article; Journal  
TC Experimental  
CY United Kingdom  
LA English

L4 ANSWER 21 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1994:4673480 INSPEC DN B9406-0100-125  
TI 1994 Semiconductor Pure Water and Chemicals Conference Proceedings.  
AU Editor(s): Balazs, M.K.  
SO Sunnyvale, CA, USA: Balazs Anal. Lab, 1994. ii+288 pp.  
Conference: San Jose, CA, USA, 8-10 March 1994  
DT Conference Proceedings  
CY United States  
LA English

L4 ANSWER 22 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1993:4397022 INSPEC DN A9311-8160C-022; B9306-2550E-038  
TI Native oxide growth and organic impurity removal on Si surface with  
ozone-injected ultrapure water.  
AU Ohmi, T.; Isagawa, T.; Kogure, M.; Imaoka, T. (Dept. of Electron., Tohoku  
Univ., Sendai, Japan)  
SO Journal of the Electrochemical Society (March 1993) vol.140, no.3,  
p.804-10. 17 refs.  
CODEN: JESOAN ISSN: 0013-4651  
DT Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 23 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1992:4211191 INSPEC DN B9209-2550G-019  
TI Residual-surfactant-free photoresist development process.  
AU Shimada, H.; Onodera, M.; Shimomura, S.; Hirose, K.; Ohmi, T. (Dept. of  
Electron., Tohoku Univ., Sendai, Japan)  
SO Journal of the Electrochemical Society (June 1992) vol.139, no.6,  
p.1721-30. 15 refs.  
CODEN: JESOAN ISSN: 0013-4651  
DT Journal  
TC Practical; Experimental  
CY United States  
LA English

L4 ANSWER 24 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1987:2859146 INSPEC DN A87054089  
TI Reactions of chlorine nitrate with HCl and H<sub>2</sub>O.  
AU Hatakeyama, S.; Leu, M.-T. (Jet Propulsion Lab., California Inst. of

STN Columbus

Technol., Pasadena, CA, USA)  
SO Geophysical Research Letters (Nov. 1986) vol.13, no.12, p.1343-6. 13 refs.  
Price: CCCC 0094-8276/86/006L-6298\$03.00  
CODEN: GPRLAJ ISSN: 0094-8276  
DT Journal  
TC Experimental  
CY United States  
LA English

L4 ANSWER 25 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1976:990489 INSPEC DN A76094470  
TI The absorption of solar radiation in model atmospheres.  
AU Kerschgens, M.; Raschke, E.; Reuter, U. (Inst. fur Geophys. und  
Meteorologie, Univ. zu Koln, Koln, West Germany)  
SO Contributions to Atmospheric Physics (1976) vol.49, no.2, p.81-97. 34  
refs.  
CODEN: BPYAAV ISSN: 0005-8173  
DT Journal  
TC Theoretical  
CY Germany, Federal Republic of  
LA English

L4 ANSWER 26 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1974:681675 INSPEC DN A74067112; B74034073  
TI Surface cleaning by ultraviolet radiation.  
AU Sowell, R.R.; Cuthrell, R.E.; Mattox, D.M.; Bland, R.D. (Sandia Labs.,  
Albuquerque, NM, USA)  
SO Journal of Vacuum Science and Technology (Jan.-Feb. 1974) vol.11, no.1,  
p.474-5. 6 refs.  
CODEN: JVSTAL ISSN: 0022-5355  
Conference: 11th Conference on Microbalance Techniques. New York, NY, USA,  
9-12 Oct 1973  
Sponsor(s): American Vacuum Soc  
DT Conference Article; Journal  
TC Experimental  
CY United States  
LA English

=> d 1-26 ab

L4 ANSWER 1 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The authors found that it is possible to detach **ozone** from silica gel  
under the same temperature and same pressure conditions which silica gel  
**adsorbed ozone**. The extra energy, which is required for removing  
**ozone**, is unnecessary. Only the oxygen-purging step is required. They  
changed the temperature of the silica gel and measured the differences in  
the amount of stored **ozone**. The amount of **adsorption** became linear. It  
followed the expression of van't Hoff. They developed a computer program  
to simulate the phenomenon of the storage and removal. The results of the  
program demonstrated this phenomenon. The authors propose to use this  
method as a storage method for **ozone**. The **ozone** storage system,  
according to this principle, is compact and inexpensive to construct. In  
this system, they calculated the power consumption of a sewage plant,  
which processes 100,000 tons of wastewater per day. The generation ability  
of the ozonizer can be decreased approximately 40 percent by introducing  
the **ozone** storage unit. The storing temperature is minus 17 degrees  
Celsius constant, in this result the cost of storage and removal equipment

is not expensive. From these results, it is clarified that this method is effective to power load leveling.

## L4 ANSWER 2 OF 26 INSPEC COPYRIGHT 2002 IEE

AB With regard to tritiated contaminants, effective and simple dry decontamination method using **ozone** gas were proposed. By the treatment in **ozone** gas of 400 ppmv at 400 K, in the cases of stainless steel, the decontamination efficiencies of over 99% were obtained for 1 hour, and the decontamination efficiencies of aluminum were 80-86%. By the treatment of **ozone** gas, the quantity of the carbon atom on the surface and in inside layer were decreased, and the oxidation on the surface and in inside was proceeded, which may be assumed and expected that the recombination, release and diffusion to the surface of tritium are prevented by a rigid oxide layer generated. The **ozone** gas treatment is easy to use and apply in practice with a simple and safe operation. Furthermore, gas-phase decontamination technology has many advantages over conventional wet methods, in particular, its simple control processes and small secondary waste. The proposed decontamination technology has the sufficient ability and potential to simplify a decontamination operation and reduce the large volumes waste.

## L4 ANSWER 3 OF 26 INSPEC COPYRIGHT 2002 IEE

AB **Ozone** is used for sterilization, deodorization, decoloring, bleaching, and other color-related purposes. Especially, high-concentration **ozone** is attracting attention for large scale plants such as waste **water** treatments, pulp bleaching and so on. To generate high high-concentration **ozone**, we developed a coplanar discharge ozonizer. Coplanar discharge occurs between many pairs of electrode on a same plane of glass substrate. Since this method cools the rear side of substrate in the same manner as a conventional surface discharge method, it can efficiently cool gases formed on the surface of the electrodes. Moreover, since a coplanar discharge method can be limited to a narrow area adjacent to the electrode surface, a high electric field is formed easily. We examined electrode patterns and generation of high-concentration **ozone** and their relation to electric fields. As feed gas, high purity oxygen gas from cylinder or liquid oxygen, or low purity oxygen ( $O_2/N_2/Ar$ ) from a pressure swing adsorption (PSA) gas generator was used to generate **ozone**. We report mainly the relationship between electrode pattern and **ozone** synthesis and the effects of the addition of gases in this paper.

## L4 ANSWER 4 OF 26 INSPEC COPYRIGHT 2002 IEE

AB Cyanoacetylene ( $HC_3N$ ) and **ozone** ( $O_3$ ) were co-**adsorbed** on different sites of a **water** ice surface and **ozone** was selectively irradiated with a YAG laser at 255 nm at 20 and 60 K. Two products were observed by FTIR spectroscopy,  $H_2O_2$  resulting from the direct reaction between the ice surface and atomic oxygen, and cyanoketene resulting from the reaction of cyanoacetylene and atomic oxygen. The cyanoketene was characterized in an argon matrix by laser and broad band irradiations from a co-deposition of two mixtures ( $O_3/Ar$  and  $HC_3N/Ar$ ) at 7 K.

## L4 ANSWER 5 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The structural properties of the  $N=64$  ST2 **water** clusters under the influence of uniform and static external electric fields are examined by means of Monte Carlo simulations. This system is taken as a model representation of an ice surface micro fragment immersed into the electric field generated by different (in sign) charges accumulated on the opposite surfaces of the fracture. Ice surface defects are considered to play an important role in the enhanced **adsorption** ability of vapor molecules like  $HCl$  and  $ClONO_2$ . We have found that fields of the order of  $10^7$  V/cm do not affect considerably the melting transition in the cluster. However,

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such a transition is not observed for fields several times stronger. Electric fields induce a significant anisotropy in the electrical characteristics of the cluster. At temperatures pertinent to stratospheric conditions, transverse to the field direction, polarization fluctuations increase considerably with the field, a fact that is related to enhanced reorientational motions of the **water** molecules. Field induced repulsion forces within the cluster tend to cluster elongation and even break it up.

L4 ANSWER 6 OF 26 INSPEC COPYRIGHT 2002 IEE

AB Thin ultradisperse diamond (UDD) layers deposited from a **water** suspension are studied by optical and X-ray photoelectron spectroscopy (XPS). The effective band gap determined by the 104-cm<sup>-1</sup> criterion for **ozone**-cleaned UDD is 3.5 eV. The broad structureless photoluminescence band (380-520 nm) is associated with radiative recombination through a system of continuously distributed energy levels in the band gap of diamond nanoclusters. The optical absorption of the material at 250-1000 nm originates from absorption on the disordered nanocluster surface containing threefold-coordinated carbon. The surface of UDD clusters subjected to acid cleaning contains nitrogen-oxygen complexes **adsorbed** in the form of NO<sub>3</sub><sup>-</sup>nitrate ions. Annealing in a hydrogen atmosphere results in desorption of the nitrate ions from the cluster surface. The evolution of the oxygen (O<sub>1s</sub>) and nitrogen (N<sub>1s</sub>) lines in the XPS spectra under annealing of a UDD layer is studied comprehensively.

L4 ANSWER 7 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The interaction of **ozone** with ice films under high vacuum was studied with single reflection Fourier transform infrared spectroscopy (incidence angle of 5 degrees). Both amorphous and crystalline ice were investigated. On amorphous ice which has a high density of free surface OH groups two states of **ozone** were observed: one which forms a hydrogen bond with the ice surface of the micropores, and a second which is attributed to a physisorbed state. Only the latter state is observed on the crystalline ice surface. When chemisorbed **ozone** is covered by an amorphous film, a temperature increase above 60 K leads to diffusion (with a weak yield) of **ozone** in the **water** lattice. Absorbed **ozone** remains in the ice bulk until sublimation of the ice film near 155 K.

L4 ANSWER 8 OF 26 INSPEC COPYRIGHT 2002 IEE

AB We have observed giant Cl<sup>-</sup> and F<sup>-</sup> enhancements by factors of 102-104 in electron-induced dissociation of a fractional monolayer of CF<sub>2</sub>Cl<sub>2</sub> when CF<sub>2</sub>Cl<sub>2</sub> is coadsorbed with **water** ice or ammonia ice on a surface. The enhancement of Cl<sup>-</sup> is much stronger than that of F<sup>-</sup>, and the enhancements for both ion species by NH<sub>3</sub> coadsorbate are stronger than those by H<sub>2</sub>O. Moreover, the magnitudes of enhancement increase strongly with decreasing CF<sub>2</sub>Cl<sub>2</sub> concentration. Only small negative-ion enhancements are observed for coadsorption with nonpolar CH<sub>4</sub> molecules. It is proposed that giant negative-ion enhancements are due to dissociation of CF<sub>2</sub>Cl<sub>2</sub> by capture of electrons self-trapped in polar **water** or ammonia molecules. This process may have far-reaching implications for the **ozone**-hole creation in the polar stratosphere.

L4 ANSWER 9 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The Cl<sup>-</sup> yield produced by dissociative electron attachment of a submonolayer of CF<sub>2</sub>Cl<sub>2</sub> is enhanced by factors of 102 and 104 when CF<sub>2</sub>Cl<sub>2</sub> is coadsorbed with **water** ice and ammonia ice, respectively, on a surface at 25 K. Moreover, the magnitude of Cl<sup>-</sup> enhancement increases strongly with decreasing CF<sub>2</sub>Cl<sub>2</sub> concentration. This enhancement is attributed to dissociation of CF<sub>2</sub>Cl<sub>2</sub> by capture of electrons self-trapped in polar **water** or ammonia molecules. This process may be an unrecognized sink for chlorofluorocarbons in the atmosphere. Cl<sup>-</sup> ions produced may be directly

or indirectly converted to Cl atoms, which then destroy ozone.

L4 ANSWER 10 OF 26 INSPEC COPYRIGHT 2002 IEE  
 AB Borophosphosilicate glass films deposited by tetraethoxysilane-ozone chemical vapor deposition are highly susceptible to atmospheric moisture absorption. Moisture diffuses into these oxides through the exposed surface and incorporates itself as surface adsorbed water, silanol, and phosphorous dihydroxide. Thermal treatments dehydrate the glass matrix by (i) driving off surface adsorbed water, (ii) causing pairs of silanol groups to react to form silicon dioxide, and (iii) causing doubly hydroxylated phosphorous atoms to form phosphorous-oxygen double bonds. The residual stress and thickness of as-deposited films change rapidly over time due to the moisture instability whereas these properties are stable in furnace densified films. Films treated under various rapid thermal processing conditions (temperatures from 700 to 900 degrees C and times from 10 to 50 s) are chemically similar to each other but have different physical properties depending on the specific conditions of the cure. The degree of chemical and physical change that takes place in these films over time also depends on the specific cure conditions. Phosphorous hydration plays an important role in these changes which correlate more strongly with the cure temperature than the cure time. For all of the cure conditions studied, the postcure film density is a consistently good predictor of the subsequent film stability.

L4 ANSWER 11 OF 26 INSPEC COPYRIGHT 2002 IEE  
 AB HOCl has been implicated in the destruction of stratospheric ozone via a reaction catalyzed on ice surfaces in polar stratospheric clouds. Adsorption of HOCl on ice is a prototype of a simple ice surface reaction, and it has been the subject of several laboratory studies, making this a valuable case for testing theoretical approaches to ice surface reactions. The present paper describes a first-principles theoretical study of HOCl adsorption on ice, applying density functional theory (DFT) to cluster models of the (0001) surface of ice Ih. In the most stable binding configurations, HOCl acts as a proton donor in a hydrogen bond. The strength of HOCl binding on the surface depends not only on the hydrogen bonding interaction but also on electrostatic and many-body interactions with neighboring water molecules. The results of these DFT calculations are compared to post-Hartree-Fock calculations of the H<sub>2</sub>O-HOCl complex and to empirical potential simulations of HOCl on ice.

L4 ANSWER 12 OF 26 INSPEC COPYRIGHT 2002 IEE  
 AB Bromoform (CHBr<sub>3</sub>) was measured in vertical profiles from the snow surface through the snowpack, sea ice, and water column to the seafloor at Resolute Bay, Canada, in the spring of 1992. Elevated concentrations of bromoform were observed in both the ice and seawater at the ice-water interface, associated with bromoform emission from ice microalgae. A surprising finding was a second horizon of high bromoform concentrations in sea ice at the snow-ice interface. Chlorophyll and salinity were also elevated in this upper ice layer, although chlorophyll was much lower than in the basal ice microalgal layer. We speculate that this upper bromoform-enriched layer may have originated from scavenging of the surface water layer by frazil ice during initial ice formation in the preceding autumn. Equally unexpected was the occurrence of yet higher bromoform concentrations in snowpack immediately overlying the sea ice, declining in concentration (by about a factor of 2 or more) toward the snow surface. Snow of very recent origin, however, contained as little as 2 orders of magnitude less bromoform than the older snowpack. Possible origins for elevated bromoform in the snowpack include diffusion out of the bromoform-enriched upper ice layer and gradual concentration of

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bromoform out of the atmosphere by **adsorption** on to ice crystals. In one scenario, photolysis of bromoform from snow is considered, which might help account for atmospheric bromine-**ozone** chemistry. The possible contributions from snow, sea ice, and seawater to atmospheric bromoform levels during both the winter and spring are also considered, and it is concluded that surface seawater presents the most significant reservoir for atmospheric bromoform.

L4 ANSWER 13 OF 26 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE  
AB Immersional heats of carbon blacks into n-heptane and **water** have been investigated. It has been found that the dispersion component of the carbon black surface free energy ( gamma sd) calculated from heat of immersion data slightly decreases with the surface oxygen concentration, which is suggested to be caused by the partial perturbation of the graphitic structure on the carbon black surface. gamma sd was also calculated from the nitrogen **adsorption** data and compared with that from heat of immersion data. The heat of immersion in **water** increases with the carbon black surface oxygen concentration. The **ozone** oxidation of the carbon black has been found to improve the filled-rubber properties for a polar rubber (nitrile butadiene rubber), but to decrease the properties for a non-polar rubber (natural rubber).

L4 ANSWER 14 OF 26 INSPEC COPYRIGHT 2002 IEE  
AB The chlorine activation reaction ClONO<sub>2</sub>+HCl to HNO<sub>3</sub>+Cl<sub>2</sub> was investigated in the laboratory on hydroxylated alpha -alumina surfaces under reactant partial pressure, humidity, and temperature conditions covering those which are encountered at mid-latitudes in the lower stratosphere. The measured reaction probability is gamma 0.02. This result has implications with regard to the stratospheric impact of launch vehicles utilizing solid-fuel rocket motors (SRMs), such as the Space Shuttle. The exhaust from SRMs consists of alumina particles and of HCl and other vapors. The reaction probability measured in this work suggests that the **ozone** depletion potential of SRMs may be higher than that predicted on the basis of the chlorine emissions alone, especially at mid-latitudes in the lower stratosphere, where catalytic chlorine activation by background sulfuric acid aerosols is very inefficient. The reaction probability on Pyrex glass was found to be similar to that on alpha -alumina. The reaction mechanism appears to be determined by the **water** layers **adsorbed** on the surface, rather than by the detailed nature of the refractory surface itself.

L4 ANSWER 15 OF 26 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE  
AB The **water** acceptance of aerosol particle surfaces is a key factor for atmospheric hygiene as it initiates gravitational settling by **water** up-take. To examine the concurrent influences on the surface of real airborne particles concerning the deposition of hydrophobic organic material, six particle sampling campaigns were performed in polluted outdoor-air under different air conditions. The particles were examined with SNMS, SIMS, and XPS with special view of the chemical inventory of the surface region. The total elemental inventory obtained with SNMS shows carbon compounds in all particle size classes. Soot seems to govern the submicron particles while the coarse fraction contains soil dust or fly ash. Depth-resolved analysis shows organic carbon compounds to be surface-enriched and to dominate the composition of the topmost molecular layers of the particles independent of the collection time and particle sizes. However, chlorides and ammonium sulfate were also found at the surface which will always reduce the hydrophobicity of the surface caused by organic compounds. No correlation was discovered between the **ozone** or NO<sub>2</sub> concentration of the air and the type and quantity of the organic surface components.

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L4 ANSWER 16 OF 26 INSPEC COPYRIGHT 2002 IEE  
AB (111) textured Au films were oxidized under UHV conditions by exposing them to UV radiation and **ozone**. The Au films were characterized by X-ray photoelectron spectroscopy. The gold surface becomes heterogeneous upon oxidation: approximately 0.8 monolayer (ML) of the **adsorbed** oxygen is present as chemisorbed species. The rest of the **adsorbed** oxygen forms, on the average, a few ML thick gold oxide with a stoichiometry close to Au<sub>2</sub>O<sub>3</sub>. Both the oxide and the chemisorbed oxygen disappear slowly when heated to 150 degrees C. During isothermal decomposition at 200 degrees C, the oxide is transformed to chemisorbed oxygen prior to desorption. Both the chemisorbed oxygen and the gold oxide can be removed by rinsing with **water**, and the surface is hydrophilic after the rinse. When contaminated gold films are exposed to UV/**ozone**, impurity oxides appear at higher binding energies than the binding energies of oxygen on clean gold samples. The impurity oxides are thermally much more stable than Au<sub>2</sub>O<sub>3</sub>.

L4 ANSWER 17 OF 26 INSPEC COPYRIGHT 2002 IEE  
AB The uptake of HBr in **water** ice has been investigated in a flow reactor under polar atmospheric conditions. The HBr uptake on ice films was determined in the range of  $1.1 \pm 0.7 \times 10^{14} - 7.7 \pm 1.1 \times 10^{16}$  molecules/cm<sup>2</sup> at 188 and 195 K as HBr partial pressures varied from  $3.7 \times 10^{-8}$  to  $6.4 \times 10^{-6}$  Torr. This is the first report of a laboratory study at polar atmospheric conditions that shows HBr·3H<sub>2</sub>O to be formed during the uptake process. The HBr **adsorption** and uptake thermodynamics were also investigated. The implications of these new findings for the heterogeneous chemistry of the polar **ozone** depletion are briefly discussed.

L4 ANSWER 18 OF 26 INSPEC COPYRIGHT 2002 IEE  
AB Investigates some thermodynamic properties (i.e., freezing/melting points) and heterogeneous chemistry of sulfuric acid monohydrate (SAM, H<sub>2</sub>SO<sub>4</sub>·H<sub>2</sub>O), using a fast flow reactor coupled to a quadrupole mass spectrometer. The freezing point observations of thin liquid sulfuric acid films show that for acid contents between 75 and 85 wt.% the monohydrate crystallizes readily at temperatures between 220 and 240 K on a glass substrate. Once formed, SAM can be thermodynamically stable in the H<sub>2</sub>O partial pressure range of  $(1-4) \times 10^{-4}$  torr and in the temperature range of 220–240 K. For a constant H<sub>2</sub>O partial pressure, lowering the temperature causes SAM to melt when the temperature and **water** partial pressure conditions are out of its stability regime. The reaction probability measurements indicate that the hydrolysis of N<sub>2</sub>O<sub>5</sub> is significantly suppressed owing to the formation of crystalline SAM: The reaction probability on **water-rich** SAM (with higher relative humidity, or RH) is of the order of 10<sup>-3</sup> at 210 K and decreases by more than an order of magnitude for the acid-rich form (with lower RH). The hydrolysis rate of ClONO<sub>2</sub> on **water-rich** SAM is even smaller, of the order of 10<sup>-4</sup> at 195 K. These reported values on crystalline SAM are much smaller than those on liquid solutions. No enhancement of these reactions is observed in the presence of HCl vapor at the stratospheric concentrations. In addition, Brunauer, Emmett, and Teller analysis of gas **adsorption** isotherms and photomicrography have been performed to characterize the surface roughness and porosities of the SAM substrate. The results suggest the possible formation of SAM in some regions of the middle- or low-latitude stratosphere and, consequently, much slower heterogeneous reactions on the frozen aerosols.

L4 ANSWER 19 OF 26 INSPEC COPYRIGHT 2002 IEE  
AB A gold surface exposed to UV light can be purged of sulfur impurities via oxidation of chemisorbed sulfur to sulfonates which can then be removed by washing with high purity **water**. The UV cleaning process involves UV conversion of oxygen to **ozone** and atomic oxygen which then transform surface species to either volatile states that desorb, or highly oxidized

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molecules which are **water** soluble. The UV/**ozone** method allows one to remove old self-assembled (SA) thiol monolayers and to provide a fresh surface for additional SA experiments. In addition, gold which has been contaminated by ambient sulfur can be cleaned by the UV protocol. Because the method only requires a UV lamp and high purity **water** for eliminating certain inorganics such as sulfur, the use of other chemicals required in solvent cleaning protocols is unnecessary. UV treatment is noninvasive because it only affects **adsorbed** surface molecules and not inert substrates such as gold. Thus surface roughening at the atomic scale which occurs with ion bombardment methods is avoided. The UV process, then, should be ideal for cleansing atomically flat gold substrates needed in scanning microscopy studies of SA monolayers.

L4 ANSWER 20 OF 26 INSPEC COPYRIGHT 2002 FIZ KARLSRUHE

AB An understanding of the composition, structure, transport and photochemical processes of the present atmosphere of Mars is essential for addressing such fundamental questions as the stability, evolution and the origin of the Martian atmosphere. This paper discusses our current knowledge of the photochemistry and stability of the Martian atmosphere, with special emphasis on new models and work in progress. The atmosphere of Mars is composed mainly of CO<sub>2</sub> (95.3% by volume), N<sub>2</sub> (2.7%), and 40Ar (1.6%). Trace constituents, especially H<sub>2</sub>O vapor (150-200 ppm, average), CO (0.07%), O<sub>2</sub> (0.13%), and **ozone** (0.03 ppm average) make up the rest. Vertical mixing, characterized by an eddy diffusion coefficient, is of the order of 106 cm<sup>2</sup> s<sup>-1</sup> up to 40 km, rising to 108 cm<sup>2</sup> s<sup>-1</sup> at the homopause (125 km). Photochemistry initiated by the solar ultraviolet dissociation of CO<sub>2</sub> and H<sub>2</sub>O, results in the formation and distribution of the above-mentioned trace constituents. The homogeneous gas phase chemical reactions, however, do not entirely explain the stability of CO<sub>2</sub>, O<sub>2</sub>, or CO, thus necessitating the inclusion of heterogeneous **adsorption** as a loss mechanism for certain species, such as H<sub>2</sub>O, OH, H<sub>2</sub>O<sub>2</sub>, O or O<sub>2</sub> on aerosols of dust or ice suspended in the Martian air.

L4 ANSWER 21 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The following topics were dealt with: non-ionic silica removal using **ozone**-UV treatment for semiconductor ultrapure **water** systems; colloidal substances in **ozone**-UV treatment; perfluoroelastomers gaskets and sealers in semiconductor wet processing; boron behaviour in ultrapure **water** manufacturing systems; organic contaminants removal from Si wafer surface; nonvolatile residue measurement of small volume solvents; metallic contaminants removal in an RCA-2 clean; deposition and removal mechanism of noble metals in wet chemical processing; noble metal contamination prevention during Si processing; ultra-pure IPA purification and recycling system; advanced processing technology for spent semiconductor; on-site blending and delivery of dilute HF to wafer cleaning and etching equipment; particles analysis in high purity hydrogen peroxide by laser counter; particle deposition control for various wafer surfaces; surface micro roughness and etch rate comparison using atomic force microscopy; and **adsorption/desorption** in ICP-MS.

L4 ANSWER 22 OF 26 INSPEC COPYRIGHT 2002 IEE

AB To manufacture ULSI devices with high performance and reliability in large volume, further integration and miniaturization are being promoted. The key issue in realizing what the authors call 'Noise-free Manufacturing' is to keep the wafer surface ultraclean all the time. To realize the ultraclean wafer, organic impurities **adsorbed** on the wafer surface must be removed first before other wafer cleaning procedures. This is because native oxide and metallic impurities on the wafer cannot be removed completely in the presence of residual organic impurities on the surface. The conventional wet cleaning process is designed to have the

H<sub>2</sub>SO<sub>4</sub>/H<sub>2</sub>O<sub>2</sub>/H<sub>2</sub>O cleaning performed at the first stage to remove organic impurities on the wafer. Because the solution in this cleaning must be heated to about 130 degrees C, the chemical composition of the solution cannot be maintained at a constant level. This means that the cleaning is not perfectly controlled. The H<sub>2</sub>SO<sub>4</sub>/H<sub>2</sub>O<sub>2</sub>/H<sub>2</sub>O cleaning has another serious problem: the cleaning step produces a large volume of chemical waste that must be treated properly. They have developed a cleaning technology using ozone-injected ultrapure water. Ozone concentration in the water is 1-2 p.p.m. This process is capable of effectively removing organic contaminants from the wafer surface in a short time at room temperature. Processing waste from this process is simple. Chemical composition of the ozone-injected ultrapure water can be controlled easily.

## L4 ANSWER 23 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The addition of small amounts of surfactant and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) to the developer is shown to improve the performance of the photoresist development process. Exposed photoresist areas are dissolved more uniformly, the smoothness of Si surface is maintained, and carbon contamination during the development process is prevented. Ozone (O<sub>3</sub>) treated ultrapure water rinsing at room temperature is an efficient way to remove the surfactant adsorbed on Si surface. A surfactant-added developer improves wettability on the photoresist surface, which leads to more uniform developing. The dissolution rate in the exposed photoresist is promoted and the etching rate of Si substrate is suppressed due to the effect of the additional surfactant. The only major disadvantage, due to the reaction of the surfactant in the strong alkali solution, is that the surfactant remains adsorbed on Si surface. H<sub>2</sub>O<sub>2</sub> additions to the developer or ozone treated rinse water can remove the surfactant residues.

## L4 ANSWER 24 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The kinetics of the reactions of chlorine nitrate with HCl and H<sub>2</sub>O have been investigated using a static photolysis/Fourier transform infrared spectrophotometer apparatus. Upper limits for the rate constants for the homogeneous gas-phase reactions of ClONO<sub>2</sub>+HCl (1) and ClONO<sub>2</sub>+H<sub>2</sub>O (2) were estimated to be <8.4\*10<sup>-21</sup> and <3.4\*10<sup>-21</sup> cm<sup>3</sup> molec<sup>-1</sup> s<sup>-1</sup> respectively, at 296+or-2K. The yields of HNO<sub>3</sub> were 1.05+or-0.09 and 0.86+or-0.08, respectively. No synergistic effect between H<sub>2</sub>O and HCl was observed. The kinetic behavior of reaction (2) was well described by simple first-order kinetics while the behavior of reaction (1) was found to be well described in terms of the Langmuir adsorption isotherm. The results are of interest to stratospheric O<sub>3</sub> studies.

## L4 ANSWER 25 OF 26 INSPEC COPYRIGHT 2002 IEE

AB The absorption of solar radiation of the wave-length interval from 200 to 3580 nm is studied in clear, but inhomogeneously stratified model atmospheres with an iterative solution of the radiative transfer equation. The influence of ground albedo on the radiative heating in all layers is studied with a rough ocean and a bright desert surface as lower boundaries. Integral band transmission functions for water vapour, oxygen and carbon dioxide are approximated by finite series of exponentials. It is shown that the vertical profiles of radiative heating are determined in all layers up to 70 km altitude by the transmission functions of atmospheric gases from different sources and also by the accuracy of their fit with a series of exponentials. In the lower stratosphere the multiple scattering and adsorption by aerosols, CO<sub>2</sub> and H<sub>2</sub>O may double the solar heating compared to that by ozone only. In all atmospheric layers an increase of absorption is found by an increasing surface albedo and dust content as well.

## L4 ANSWER 26 OF 26 INSPEC COPYRIGHT 2002 IEE

AB UV radiation had been used for removing photoresist films and its action attributed to depolymerization and oxidation arising from the presence of **ozone**. In the study reported u.v. light from commercial mercury vapour lamps (blacklights) was employed to irradiate glass (0110) and gold surfaces contaminated by **adsorbed** hydrocarbons. The coefficient of adhesion for Au on Au obtained by u.v. irradiation in a UhV-system at 10-4 torr O<sub>2</sub>-pressure was the same as that obtained by baking in UhV or sputter cleaning. Exposure without oxygen present gave an inferior coefficient of adhesion. Several hours of u.v. exposure in the laboratory air gave equivalent cleaning to heating to red heat. The glass coated with wax and degreased in trichloroethylene when irradiated (approximately 2 mW/cm<sup>2</sup>) for 15 h in air had a contact angle for **water** of zero compared with an initial value of approximately 28 degrees . The cleaning characteristics of As-received silica slides were variable but became consistent after sputter cleaning.

=> d his

(FILE 'HOME' ENTERED AT 17:35:50 ON 17 DEC 2002)

FILE 'INSPEC' ENTERED AT 17:35:59 ON 17 DEC 2002  
E ETCHING + ALL/CT

L1 11332 OZONE  
L2 199298 WATER  
L3 62998 ADSORPTION OR ADSORBED  
L4 26 L1 AND L2 AND L3

=> d 4,19,22,23 all

L4 ANSWER 4 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 2002:7140123 INSPEC DN A2002-04-8265-001  
 TI Photoreactivity on a **water** ice surface: cyanoacetylene (HC<sub>3</sub>N) reaction with atomic oxygen issued from the photodissociation of **ozone** (O<sub>3</sub>) at 255 nm.  
 AU Borget, F.; Chiavassa, T. (CNRS, Univ. de Provence, Marseille, France); Aycard, J.-P.  
 SO Chemical Physics Letters (16 Nov. 2001) vol.348, no.5-6, p.425-32. 35 refs.  
 Doc. No.: S0009-2614(01)01138-1  
 Published by: Elsevier  
 Price: CCCC 0009-2614/01/\$20.00  
 CODEN: CHPLBC ISSN: 0009-2614  
 SICI: 0009-2614(20011116)348:5/6L.425:PWSC;1-#  
 DT Journal  
 TC Experimental  
 CY Netherlands  
 LA English  
 AB Cyanoacetylene (HC<sub>3</sub>N) and **ozone** (O<sub>3</sub>) were co-**adsorbed** on different sites of a **water** ice surface and **ozone** was selectively irradiated with a YAG laser at 255 nm at 20 and 60 K. Two products were observed by FTIR spectroscopy, H<sub>2</sub>O<sub>2</sub> resulting from the direct reaction between the ice surface and atomic oxygen, and cyanoketene resulting from the reaction of cyanoacetylene and atomic oxygen. The cyanoketene was characterized in an argon matrix by laser and broad band irradiations from a co-deposition of two mixtures (O<sub>3</sub>/Ar and HC<sub>3</sub>N/Ar) at 7 K.  
 CC A8265J Heterogeneous catalysis at surfaces and other surface reactions; A8280D Electromagnetic radiation spectrometry (chemical analysis); A8250F Photolysis and photodissociation by IR, UV and visible radiation

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CT **ADSORBED LAYERS; FOURIER TRANSFORM SPECTRA; ICE; INFRARED SPECTRA; ORGANIC COMPOUNDS; OZONE; PHOTODISSOCIATION; SPECTROCHEMICAL ANALYSIS; SURFACE CHEMISTRY**

ST photoreactivity; H<sub>2</sub>O ice surface; cyanoacetylene/O reaction; photodissociation; O<sub>3</sub>; **ozone; co-adsorbed species**; irradiated YAG laser; FTIR spectroscopy; cyanoketene; Ar matrix; broad band irradiation; co-deposition; O<sub>3</sub>/Ar mixture; cyanoacetylene/Ar mixture; 255 nm; 60 K; 20 K; 7 K; H<sub>2</sub>O<sub>2</sub>; H<sub>2</sub>O

CHI H<sub>2</sub>O<sub>2</sub> bin, H<sub>2</sub> bin, O<sub>2</sub> bin, H bin, O bin; H<sub>2</sub>O sur, H<sub>2</sub> sur, H sur, O sur, H<sub>2</sub>O bin, H<sub>2</sub> bin, H bin, O bin; O<sub>3</sub> ads, O ads, O<sub>3</sub> el, O el

PHP wavelength 2.55E-07 m; temperature 6.0E+01 K; temperature 2.0E+01 K; temperature 7.0E+00 K

ET C\*H\*N; HC3N; H cp; cp; C cp; N cp; H\*O; H<sub>2</sub>O<sub>2</sub>; O cp; H<sub>2</sub>O; Ar; H; O

L4 ANSWER 19 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1995:5034436 INSPEC DN A9519-8160B-001

TI Removing sulfur from gold using ultraviolet/**ozone** cleaning.

AU Worley, C.G.; Linton, R.W. (Dept. of Chem., North Carolina Univ., Chapel Hill, NC, USA)

SO Journal of Vacuum Science & Technology A (Vacuum, Surfaces, and Films) (July-Aug. 1995) vol.13, no.4, p.2281-4. 13 refs.  
Price: CCCC 0734-2101/95/13(4)/2281/4/\$6.00  
CODEN: JVTAD6 ISSN: 0734-2101

DT Journal

TC Experimental

CY United States

LA English

AB A gold surface exposed to UV light can be purged of sulfur impurities via oxidation of chemisorbed sulfur to sulfonates which can then be removed by washing with high purity **water**. The UV cleaning process involves UV conversion of oxygen to **ozone** and atomic oxygen which then transform surface species to either volatile states that desorb, or highly oxidized molecules which are **water** soluble. The UV/**ozone** method allows one to remove old self-assembled (SA) thiol monolayers and to provide a fresh surface for additional SA experiments. In addition, gold which has been contaminated by ambient sulfur can be cleaned by the UV protocol. Because the method only requires a UV lamp and high purity **water** for eliminating certain inorganics such as sulfur, the use of other chemicals required in solvent cleaning protocols is unnecessary. UV treatment is noninvasive because it only affects **adsorbed** surface molecules and not inert substrates such as gold. Thus surface roughening at the atomic scale which occurs with ion bombardment methods is avoided. The UV process, then, should be ideal for cleansing atomically flat gold substrates needed in scanning microscopy studies of SA monolayers.

CC A8160B Surface treatment and degradation of metals and alloys

CT GOLD; SULPHUR; SURFACE CLEANING

ST **ozone cleaning; S impurities; high purity water; UV cleaning; self-assembled thiol monolayers; adsorbed surface molecules; Au; S**

CHI Au sur, Au el; S ads, S el

ET S; Au

L4 ANSWER 22 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1993:4397022 INSPEC DN A9311-8160C-022; B9306-2550E-038

TI Native oxide growth and organic impurity removal on Si surface with **ozone**-injected ultrapure **water**.

AU Ohmi, T.; Isagawa, T.; Kogure, M.; Imaoka, T. (Dept. of Electron., Tohoku Univ., Sendai, Japan)

SO Journal of the Electrochemical Society (March 1993) vol.140, no.3,

p.804-10. 17 refs.

CODEN: JESOAN ISSN: 0013-4651

DT Journal  
 TC Experimental  
 CY United States  
 LA English  
 AB To manufacture ULSI devices with high performance and reliability in large volume, further integration and miniaturization are being promoted. The key issue in realizing what the authors call 'Noise-free Manufacturing' is to keep the wafer surface ultraclean all the time. To realize the ultraclean wafer, organic impurities **adsorbed** on the wafer surface must be removed first before other wafer cleaning procedures. This is because native oxide and metallic impurities on the wafer cannot be removed completely in the presence of residual organic impurities on the surface. The conventional wet cleaning process is designed to have the H<sub>2</sub>SO<sub>4</sub>/H<sub>2</sub>O<sub>2</sub>/H<sub>2</sub>O cleaning performed at the first stage to remove organic impurities on the wafer. Because the solution in this cleaning must be heated to about 130 degrees C, the chemical composition of the solution cannot be maintained at a constant level. This means that the cleaning is not perfectly controlled. The H<sub>2</sub>SO<sub>4</sub>/H<sub>2</sub>O<sub>2</sub>/H<sub>2</sub>O cleaning has another serious problem: the cleaning step produces a large volume of chemical waste that must be treated properly. They have developed a cleaning technology using **ozone-injected ultrapure water**. **Ozone** concentration in the **water** is 1-2 p.p.m. This process is capable of effectively removing organic contaminants from the wafer surface in a short time at room temperature. Processing waste from this process is simple. Chemical composition of the **ozone-injected ultrapure water** can be controlled easily.  
 CC A8160C Semiconductors; B2550E Surface treatment; B2520C Elemental semiconductors  
 CT ELEMENTAL SEMICONDUCTORS; SILICON; SURFACE TREATMENT  
 ST native oxide growth; semiconductor; organic impurity removal; **ozone-injected ultrapure water**; ULSI devices; wafer surface ultraclean; wet cleaning; Si surface; O<sub>3</sub>-H<sub>2</sub>O; SiO<sub>2</sub>-Si  
 CHI O<sub>3</sub>H<sub>2</sub>O bin, H<sub>2</sub> bin, O<sub>3</sub> bin, H bin, O bin; SiO<sub>2</sub>-Si int, SiO<sub>2</sub> int, O<sub>2</sub> int, Si int, O int, SiO<sub>2</sub> bin, O<sub>2</sub> bin, Si bin, O bin, Si el; Si sur, Si el  
 ET Si; H<sup>\*</sup>O<sup>\*</sup>S; H<sub>2</sub>SO<sub>4</sub>; H cp; cp; S cp; O cp; H<sup>\*</sup>O; H<sub>2</sub>O<sub>2</sub>; H<sub>2</sub>O; C; O<sub>3</sub>-H<sub>2</sub>O; O<sup>\*</sup>Si; O sy 2; sy 2; Si sy 2; SiO<sub>2</sub>; Si cp; SiO<sub>2</sub>-Si; O<sub>3</sub>H<sub>2</sub>O; H; O; SiO

L4 ANSWER 23 OF 26 INSPEC COPYRIGHT 2002 IEE

Full Text

AN 1992:4211191 INSPEC DN B9209-2550G-019  
 TI Residual-surfactant-free photoresist development process.

AU Shimada, H.; Onodera, M.; Shimomura, S.; Hirose, K.; Ohmi, T. (Dept. of Electron., Tohoku Univ., Sendai, Japan)

SO Journal of the Electrochemical Society (June 1992) vol.139, no.6, p.1721-30. 15 refs.

CODEN: JESOAN ISSN: 0013-4651

DT Journal  
 TC Practical; Experimental  
 CY United States  
 LA English  
 AB The addition of small amounts of surfactant and hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>) to the developer is shown to improve the performance of the photoresist development process. Exposed photoresist areas are dissolved more uniformly, the smoothness of Si surface is maintained, and carbon contamination during the development process is prevented. **Ozone** (O<sub>3</sub>) treated ultrapure **water** rinsing at room temperature is an efficient way to remove the surfactant **adsorbed** on Si surface. A surfactant-added developer improves wettability on the photoresist surface, which leads to more uniform developing. The dissolution rate in the exposed photoresist

STN Columbus

is promoted and the etching rate of Si substrate is suppressed due to the effect of the additional surfactant. The only major disadvantage, due to the reaction of the surfactant in the strong alkali solution, is that the surfactant remains **adsorbed** on Si surface. H<sub>2</sub>O<sub>2</sub> additions to the developer or **ozone treated rinse water** can remove the surfactant residues.

CC B2550G Lithography

CT PHOTORESISTS; SEMICONDUCTOR TECHNOLOGY

ST residual surfactant free photoresist; C contamination; semiconductor device technology; development process; surfactant; performance; wettability; dissolution rate; etching rate; **ozone treated rinse water**; Si surface; H<sub>2</sub>O<sub>2</sub>

CHI Si sur, Si el; H<sub>2</sub>O<sub>2</sub> bin, H<sub>2</sub> bin, O<sub>2</sub> bin, H bin, O bin

ET H\*O; H<sub>2</sub>O<sub>2</sub>; H cp; cp; O cp; Si; C; H<sub>2</sub>O; H; O

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